

- Fig. 14.* Posterior segment of the larva, showing the protruded rectal gills, *r.g.*  
*Fig. 15.* Anterior portion of the pupa, seen ventrally: *l.3*, the third pair of legs; *p.h.*, prothoracic respiratory horns; *p.w.*, terminal protuberance of the wings.  
*Fig. 16.* Sensory vestigial remains of thoracic legs of the larva.  
*Figs. 17 & 18.* Abdominal hooks, with sensory hairs of the pupa.  
*Fig. 19.* Abdominal segments of the pupa, seen dorsally.  
*Fig. 20.* Posterior abdominal segment of the pupa.  
*Fig. 21.* Respiratory prothoracic horns, showing the spiracular papillæ.

LVIII.—*Some undescribed Rhopalocera from Mesopotamia and N.W. Persia ; and other Notes.* By N. D. RILEY.

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THE following notes are based on the very rich material brought from Mesopotamia and N.W. Persia by Lt.-Col. H. D. Peile, I.M.S., F.E.S. Col. Peile is to be congratulated highly on the excellent condition of the specimens, the fullness of the data, and on the number of species obtained, often under conditions not at all conducive to entomological enthusiasm. The Museum also is greatly indebted to him for the generosity with which he has presented not only the types of all the forms, but also "as many as we want of everything else."

Col. Peile hopes shortly to publish in the Journal of the Bombay Nat. Hist. Soc. a fuller account of the *Rhopalocera* of the regions in which he collected, and to figure the majority of the new forms. Fuller particulars as to dates and localities, &c., will be found therein. Only those specimens of the species mentioned below, which have been incorporated in the General Collection of the Museum, are referred to here.

Pieridæ.

1. *Euchloë ausonia persica*, Verity.

Rhop. Pal. p. 178 (1908).

7 ♂, 7 ♀, Fathah, R. Tigris, 19–30. iii. 1920.

Verity says of his type specimen: "La tache apicale, peu étendue, mais très noire et à limites très nettes, rappelle plutôt celle de *belemia*, tandis que le trait discoidal très réduit, très droit et aussi éloigné de la côte que chez *falloui*,

a un aspect qu'on ne retrouve chez aucun autre *Euchloë*; ce trait a la même ampleur sur les deux surfaces."

This description fits exactly the specimens collected by Col. Peile, but its application by Verity to the specimens from Schahrud in the B.M., which he figures at plate 67, figs. 31 & 32, seems, in view of this additional material, no longer justifiable. The two features on which he lays stress are the sharp definition of the inner edge of the apical patch and the reduction of the size of the discoidal spot. In the Schahrud specimens the former is very broad and diffuse, the latter large and almost quadrate, in both sexes. This race from N.E. Persia may well be called *VERITYI*, sp. n., the types being the ♂ and ♀ in the B.M. figured by Verity, and *persica*, Ver., be restricted to the race from Western Persia, Kurdistan, &c.

B.M. types No. Rh. 161, ♂, 12.5.78; 162, ♀, 15.5.71, *Christoph. ex Coll. Elwes*, Shahrud, N.E. Persia.

## 2. *Zegris eupheme dyala*, Peile.

Entomologist, liv. p. 151 (1921).

26 ♂, 26 ♀, Kizil-Robat, L. bank of R. Dyala, 10. iii.-6. iv. 1919.

Resembles the f. *tshudica* in the whiteness of the apical area of the underside of the forewing, but can at once be separated from it by the far greater reduction in the extent of the green mottling of the underside of the hindwing. The orange patch is usually much smaller, and the grey apex very much blacker, than in f. *menestho*.

There are three pairs of typical *tshudica* in the B.M. from S. Russia, and all of them agree far better with Herrich-Schäffer's figure of *tshudica* than do these specimens from the R. Dyala. I suspect that the male mentioned by Le Cerf (Ann. d'Hist. Nat. ii. (2) p. 29, 1913), taken at Da nah-Kouh in March 1903, is referable to this race rather than to true *tshudica*.

B.M. types No. Rh. 163, ♂, 23.3.19; 164, ♀, 15.3.19, Kizil-Robat.

## 2 a. *Zegris eupheme tigris*, subsp. n.

13 ♂, 4 ♀, Fathah, R. bank R. Tigris, 18. iii.-5. iv. 20.

This race, like the preceding, comes very close to *tshudica*, H.-S. It can, however, be separated at once from that form by the yellowness of the apical area of the underside of the forewing, this area being, in Herrich-Schäffer's figures (Schmett. Eur. ff. 449-353), white, with

the exception of the extremes of the inner edge; uniformly yellow in *tigris*. The mottling of the underside of the hindwing also has considerably more yellow in its composition than is the case in true *tschudica*.

Two males approach *menestho* in the richness of the underside coloration; one approaches *dyala* in the poverty of it. The extent of the orange in the apical patch of the forewing above is, on the average, appreciably greater than is the case in *dyala*.

B.M. types No. Rh. 165, ♂, 25. 3. 20; 166, ♀, 30. 3. 20, Fathah.

### Satyridæ.

#### 3. *Pararge megæra iranica*, subsp. n.

2 ♂, Kizil-Robat, Mesopotamia, 23. 3. 19; 3 ♂, 6 ♀, Karind Gore and Harir, 13. vii.-16. viii. 18, N.W. Persia.

Underside of the hindwing lighter and more yellowish than in true *lyssa*, Bois., in that respect agreeing with Herrich-Schäffer's description of *megærina*. Herrich-Schäffer states, however, that the upperside of his *megærina* is that of Hübner's fig. 914, i. e. *lyssa*. The upperside of *iranica* is more that of Staudinger's *transcaspica*, i. e. with the much obscured hindwing, but the underside of the hindwing is much darker than in that form. The specimens are all rather smaller than the *transcaspica* and *lyssa* in the B.M.

B.M. types No. Rh. 167, ♂, 11. 7. 18; 168, ♀, 4. 7. 18, Harir.

In addition there are in the B.M. one pair from Dizful, Persia, and a further pair from Teheran which belong to this race. A pair from Gulek, Taurus, though much larger, agree in all other respects. It is probable, too, that the specimens mentioned by Le Cerf (*l. c.* p. 41), from Persia, should be referred to *iranica*.

The name *megærina* seems only tenable for the form of *lyssa* with a yellower underside to the hindwing. The "differences" given by Herrich-Schäffer for separating it are characteristics which apply equally to any form of *megæra*.

4. *Satyrus persephone*, Hübn. (*anthe*, Ochs.), and

5. *Satyrus enervata*, Staud.

As there seems to be some confusion as to whether *enervata* is a seasonal form or a geographical race of

*persephone*, it may be as well to mention that not only, as its name implies, does it lack the white veining of the underside of the hindwing, but also its genitalia differ from those of *persephone*, and it has across the bases of arcus 1b (part) to 3 of forewing above in the male a prominent black sex-mark.

These seem sufficiently good grounds for maintaining it as a good species.

#### 6. *Epinephele telmessia pallescens*, Butler.

*Epinephele pallescens*, Butler, Cat. Sat. B.M. p. 65 (1868).

*E. telmessia* var. *oreas*, Le Cerf, Ann. d'Hist. Nat. ii. (2) p. 46 (1913).

N.W. Persia, Karind Gorge, 13. 7. 18, 2 ♀; Paitak, 6. 3. 18, 1 ♀; Harir, 10. 8. 18, 1 ♀.

There seems little doubt that Le Cerf unfortunately overlooked Butler's description of *pallescens*, and that his *oreas* is the same thing.

#### 7. *Epinephele lupinus* CENTRALIS, subsp. n.

15 ♂, 15 ♀, from Kizil-Robat, Jebel Hamrin; Sulci-manyeh, Kermanshah, Harir, and Karind, iv., v., vi., vii., viii., & ix. 1918 & 1919.

Staudinger's description of "*E. lycaon* var. *intermedia*" runs as follows:—"The almost universally common species *E. lycaon* is a species very variable as to size, nature of hair-scales, colour, etc. The large examples from S.E. Europe with the forewing in the male more lightly covered with long hairs was described long ago as var. *lupinus*, Costa. In the lower-lying (hotter) districts of Asia and Asia Minor as well as in S. Russia (according to Alphéraky) an intermediate form occurs which I call *intermedia*. Specimens are much larger than typical German *lycaon* and almost as densely hairy as the still larger *lupinus*, but darker and mostly with a broader (shorter) androconial stripe (or, rather, patch) on the forewing. Also on the underside of the hindwing they are almost always much lighter (more greyish-white) than *lycaon*, especially examples from Samarkhand, almost like typical *lupinus*. I have this var. *intermedia* from Samarkhand, Margelan; also one specimen each from Saison and Lepsa (presumably taken in other hotter districts) I must include with them. In the same way examples from Amasia and Achal Tekke District would be best included here, although the Amasia specimens are darker on the underside."

From this typical Staudinger description it at least appears that true *intermedia* is the Samarkhand, Margelan race. Hence Turati's *margelanica* must fall as an absolute synonym of *intermedia*. In Mesopotamia, Kurdistan, and Western Persia occurs a race somewhat similar to *intermedia*, but characterized by its smaller size, greyer appearance (the females particularly being very dark above, with very little orange as a rule), and the greater uniformity of the markings of the underside of the hindwing, the banded appearance of *intermedia* being absent, or almost so, in the majority of specimens. This may be known as *CENTRALIS*, subsp. n. (types: B.M. types No. Rh. 169, ♂, 6. 5. 19; 170, ♀, 7. 5. 19, Kizil-Robat, L. bank of R. Dyala, *H. D. Peile*). Somewhat similar, but characterized by a very much darker underside to the hindwing, larger size, longer and yellower hair-scales occupying a more extensive area, is the Asia Minor race (*CAPTUS*, subsp. n., B.M. types No. Rh. 171, ♂, 1. 7. 18; 172, ♀, 24. 6. 18, Kedos, *N. V. L. Rybot*). This race is very intermediate between *lupinus* and *centralis* in all respects. It is also in the B.M. from Brussa, Kilishlar, Gulek, and Yozgat, and, according to Staudinger, occurs at at Amasia. Finally, the race from Cyprus may be mentioned. It represents the extreme in depth of coloration in both sexes above and below, with the only exception of the male of *mauritanica*, Oberth., which is blacker above. The female has, by comparison, an almost sooty appearance above and the yellow markings are of a very deep shade (= *CYPRICA*, subsp. n., B.M. types, No. Rh. 173, ♂, 25. 5. 09; 174, ♀, 9. 5. 09, Nicosia, Cyprus, *J. A. Bucknill*).

### Nymphalidæ.

#### 8. *Melitæa trivialis perseæ*, Koll.

- 12 ♂, 3 ♀, 16. 3. 19–3. 4. 19, Kizil-Robat. Spring brood.  
 2 ♂, 4 ♀, 27 & 28. 6. 18, Jebel Hamrin, L. bank R. Dyana. Summer brood.  
 1 ♂, Fathah, Jebel Hamrin, 19. 6. 20. Summer brood.

#### 9. *Melitæa dedyma casta*, Koll.

- 1 ♂, 1 ♀, 12. 8. 18, Harir, N.W. Persia.

As Kollar's original descriptions of *M. casta* and *perseæ* are not usually very accessible, the following transcripts may be of use:—

- Denk. K.-K. Akad. Wissen. Wien, i. p. 50 (1850).

*Melitæa casta*. Wings above fulvous, the costal strigæ of forewing and a broad [repanda] submarginal fascia common to both wings, and the margin itself, black; forewings below with an irregular macular black fascia; hindwings pale yellowish, with two very pale yellowish bands, the broad stripes and the series of black marginal spots less distinct.

Exp. 15'''-17'''.

Next to *M. didyma*, from which, however, it differs most in that the wings above have fewer black bands and spots, and that the bands of the underside of the hindwing have almost disappeared.

*Melitæa persea*. Wings above fulvous; forewings with three black macular bands, hindwings two; below, the apex of the former and the whole of the latter pale yellow, the macular bands of the forewings below conforming with those of upper surface, the hindwings with two pale fulvous bands and black lunules and spots.

Exp. alar. 17'''.

Similar to the preceding, but the markings of the hindwings on the underside, which in *casta* are very similar to *didyma*, in this manifestly differ and come closer to *M. didyma* [sic!], from which, however, it ought to be separated, owing to the failure of the black spots, especially at the bases of the wings.

Taking these two descriptions together, remembering that Kollar also records *M. phoebe* from the same locality, and assuming, I think with perfect justification, that the passage in the above paragraph in italics must refer to some other species, not *didyma*, it seems reasonable to suppose that *casta* must be the Persian race of *didyma* and *persea* that of *trivia*. This view is much strengthened by the material in the B.M.

A character which may be found of some use in separating these two species is the position of the black marks in areas 2 and 3 of the hindwing underside, between the orange bands. These markings are generally, in each area, three in number, and in *trivia* the middle one is nearer the distal one, in *didyma* nearer the proximal one.

10. *Polygonia egea*, Cram., f. *egea*.

Karind Gorge, 13. 7. 18, 17. 7. 18, & 12. 8. 18, each 1 ♂.

f. *j-album*, Esp.

Karind Gorge, 14. 7. 18, 17. 7. 18, each 1 ♂.

11. *Polygonia c-album*, Linn., f. *hutchinsonii*, Robson.

Karind Gorge, 12. 8. 18, 1 ♂.

It will be noticed that all three forms mentioned above were taken at the same locality within a week.

It may be of interest here to publish a note on the Central Asiatic forms of this genus made by M. Andre Avinoff shortly before the war and left at the B.M.; it should help to clear up the muddle which surrounds *P. interposita*, Staud. It runs:—“*Polygonia egea* (*triangulum*) is found in Europe; in the south begins, from Caucasus, to get darker and gradually runs into the form of Central Asia. It is not the *interposita* of Staudinger, as the *interposita* is the *c-album* form with some character of *egea* (I saw the type and studied the form by the Turkestan material). Grun-Grshmailo gave the name *undina* (Rom. Mem. iv. p. 424) to the *egea* of Turkestan, but he was not quite right on the distribution (all he says about Osch and Margelan). In reality *undina* goes to Chitral by Bokhara and flies with *interposita*. The series of the B.M. contain both species; *egea* does not go to the south. *Interposita* is darker in Chitral, Goorais, Thundiani (*cognata*), and brighter and less dark in the South Himalayas (Nepal, Sikkim to Ta-Tsien-Lu), where it is *agnicula* (*tibetanus*, Elwes). *Interposita* is very near to *c-album*, but it may be a distinct species.”

From this, the series in the B.M., and indeed from Staudinger's original description (Stett. Ent. Zeit. 1881, p. 286), it is evident that *interposita* has nothing to do with *egea*, although almost invariably associated with it by authors. Staudinger's description certainly is discursive to a degree, but it is obvious he regarded *interposita* as a closer ally of *c-album* than of *egea*. What has hitherto been generally known as *interposita* must in future go by the name *undina*, Gr.-Gr.

The position in the Himalayas seems to be that there are three species, represented in the B.M. as follows:—

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|--|--|
| 1. <i>P. egea undina</i> , Gr.-Gr.,  | from Chitral and Hunza.  |
| 2. <i>P. c-album cognata</i> , Moore,                                      | „ Thundiana, Kulu, Nandar, Simla, and Chumpur.                                 |
| 3. <i>P. interposita interposita</i> , Staud.,                             | „ Chitral, Ladakh, Kylaung, Kulu, Goorais, Pangi, Dugi, Goolmurg, and Gurwhal. |
| 3a. <i>P. interposita agnicula</i> , Moore<br>( <i>tibetanus</i> , Elwes). | „ Nepal, Sikkim, Tibet to Ta-Tsien-Lu.   |

It may be as well here to correct a further error, for

which Stichel (in Seitz, *Macrolep. Pal. i. p. 208*) appears to be responsible, with regard to the Japanese forms of *c-album*. *Fentoni*, Butler, is not a synonym of *hamigera*, Butler; it is an older name than *lunigera*, Butler, for the form with the light brown underside. *Lunigera* was based on a specimen of this form with slightly narrower forewings and more melanic upperside—an extreme of the form, in fact.

### Lycænidæ.

#### 12. *Lycæna dama* KARINDA, subsp. n.

7 ♂, 7 ♀, 14. 7. 18.—9. 9. 18, Harir, Karind, and Karind Gorge, N.W. Persia.

Differs from *L. dama*, Staud. (*Iris*, iv. p. 234), in that the discal series of spots on the underside of hindwing is always complete, although the spots composing it are minute. The marginal and submarginal markings also are more fully developed. In the female the veins on the upperside are conspicuously darker.

Le Cerf (*Ann. d'Hist. Nat. ii. (2) p. 69*) records one female, under the name *dama*, from Deh-Tehechma, Arabistan. Persia. This should probably be referred to *L. dama karinda*, typical *dama* being only known from Malatia.

B.M. types No. Rh. 175, ♂; 176, ♀, 16. 7. 18, Karind Gorge.

#### 13. *Lycæna damone* DAMALIS, subsp. n.

12 ♂, 12 ♀, Karind Gorge and Harir, 13. 7. 18—9. 8. 18.

Nearest the var. *xerxes*, Staud., in colour and in that the hindwing underside is entirely devoid of any trace of the longitudinal white stripe, but differs constantly in its much larger size (30 mm. and more as against 23–24 mm. in *xerxes*), and in being entirely devoid of any trace of basal green scaling on the underside of both wings. The upperside coloration of the male is perhaps a shade paler and brighter than in typical *xerxes*, and the hind-marginal orange lunules in the female more pronounced. The general coloration of the underside in the male is lighter, more greyish, less brown than in *xerxes*; in the female of a more yellowish brown. The discoidal spot on the forewings is anteriorly more acute than in any *xerxes* examined.

B.M. types No. Rh. 177, ♂, 13. 7. 18; 178, ♀, 16. 7. 18, Karind Gorge.



14. *Lycæna peilei*, Beth. Baker.

Entomologists' Record, xxxiii, p. 63 (1921).

B.M. types No. Rh. 179, ♂ ; 180, ♀ , 17. 7. 18, Karind Gorge.

15. *Heodes thersamon* KURDISTANICA, subsp. n.

18 ♂ , 18 ♀ , 15. 7. 18-14. 9. 18, Harir, Karind Gorge, and Kermanshah.

These specimens, especially the September ones, are characterized by their small size and the lack of any fiery tinge in their coloration. They are also a much more yellow-gold even than usual in European *thersamon*, though not nearly so golden as *ochimus*.

The underside coloration is more uniform than in typical *thersamon*, the hindwing ground-colour approaching that of the forewing, and the dark spots are much reduced in size. The hindwing tails are comparatively long.

Var. *persica*, Bienert, was described from N.E. Persia. It can at once be separated from *kurdistanica* by its large size, its fiery reddish-golden colour, and its dark border.

B.M. types No. Rh. 181, ♂ , 19. 8. 18; 182, ♀ , 20. 8. 18, Harir.

16. *Aphnæus epargyros* MARGINALIS, subsp. n.

2 ♂ , 6 ♀ , 6 & 7. 8. 18, Paitak ; 2 ♂ , 1. 9. 19, Suleimanyeh.

Differs from typical *epargyros* (as represented in the B.M. by 13 males and 8 females from Persia, Turkestan, &c.), which was described by Eversmann from the Aral Sea area, by its much smaller size, darker ground-colour, and the great increase in the size of the black markings above. The submarginal band of the forewing so wide as to join the marginal line, thus forming a broad black band which, posteriorly, joins the median transverse band. The triangular patch of ground-colour so enclosed is nearly half filled by four spots between vein 4 and the costa. The black markings of the hindwing are correspondingly larger.

On the underside the ground-colour is greenish grey, not silver-grey as in typical *epargyros*, and the irregular blotches, which in *epargyros* are ochreous, are similarly slightly greenish. The blotches themselves are more rounded, neater, and the whole underside has a more delicate appearance than in typical *epargyros*.

B.M. types No. Rh. 183, ♂ ; 184, ♀ , 6. 8. 18, Paitak.

N.B.—Since its description by Eversmann in 1854,

*epargyros* has always been regarded as a synonym of *acamas*, Klug, which it is not, as the original descriptions and figures clearly prove. *Acamas* always has the base of the forewing as far as the origin of vein 2, and usually the whole (or greater part) of proximal half of hindwing, grey; in *epargyros* the yellow ground-colour extends right up to the base of the wings. In *epargyros* any lighter yellow area on the forewing is confined to area 6; in *acamas* these lighter areas are sometimes white, and may extend into the cell and areas 5 and 4. But the readiest means of separating the two species is by the shape of the submarginal band of the forewing below. In *acamas* this is an even band (or comparatively so) with a straight inner edge, or bordered internally by a series of narrow straight lines; in *epargyros*, as stated very clearly by Eversmann, it is made up of a series of decided crescents, their convex sides inward.

Typical *acamas* can be separated from its better-known Indian form *hypargyros* by its brighter colour and its much less heavily marked upperside, and also by the underside markings, which are cloudier than in *hypargyros*. It appears to be confined to Syria and Arabia, and has a softer general appearance than its Indian form.

Swinhoe's figures of *A. acamas* in Lep. Ind. pl. 734 are misleading. Figs. 1 and 1 *b* are from a male of *A. epargyros* of the typical form from Persia; fig. 1 *a* is from an apparently very dry form of *A. acamas hypargyros* from Chaman. Both specimens are in the B.M.

#### 17. *Zephyrus quercus* LONGICAUDA, subsp. n.

13 ♂, 13 ♀, 13. 7. 18-7. 8. 18, Paitak, Harir, and Karind Gorge.

A well-marked local race. It is distinguished from the typical European *quercus* most readily by its generally rather larger size, the brighter and more brilliant colour of the upperside of the male, and the great increase in the length of the tails. These measure 3-4 mm. consistently, as against 1-2 in European specimens. On the underside the general coloration is much lighter grey and the transverse white bands much straighter. The submarginal markings of the forewing below, with the exception of those in areas 1 *b* and 2, which are large, dark, and prominent, are almost absent. The anal lobe of the hindwing is much larger than in typical *quercus*, and the black spot which covers it twice the size.

B.M. types No. Rh. 185, ♂, 186, ♀, 16. 7. 18, Karind Gorge.

Three males and two females, one of the latter a beautiful example of *ab. bellus*, Gerhard, taken at Suwarra by Capt. Aldworth in early July 1919, and one male from Lenkoran, 30. 6. 74, *ex coll.* Christoph., all of which are in the B.M., are also referable to *longicauda*.

18. *Strymon* MARCIDUS, sp. n.

1 ♀, 15. 7. 18, Harir, B.M. type No. Rh. 187.

1 ♀, 16. 7. 18, Karind Gorge.

♀. *Upperside, both wings*:—Dark brown, immaculate, a fine darker anteciliary line more conspicuous on the hindwings, cilia whitish, especially on the hindwings. *Hindwing*: Anal lobe yellowish, and some yellowish scaling close to margin in areas 1*b* and 2. *Underside, both wings*:—Pale yellowish grey, cilia of same colour, preceded by a very fine darker marginal line, which is separated from a very indistinct submarginal shadowy dusky band by only a narrow white line. *Forewing*: A band of white linear spots runs from costa to vein 1, the spots being limited by the veins and inwardly margined with black, the band following almost exactly the curve of the hind margin; the lowest spot, in area 1*b*, is characteristic, being crescentic, the concave side facing outward, and as fully developed as the other spots in the series. *Hindwing*: The transverse band is similar to that of the forewing, but slightly broader and less interrupted; it follows almost exactly the curve of the hind margin, and in areas 1*c*, 2, and 3 is composed of V-shaped spots, the apex directed inward. There is also a submarginal series of spots, of which that in area 2 is large and black, inwardly bordered with yellow, black, then white; those in areas 3, 4, and 5 are small, black, ringed with paler, diminishing in size so that the one in area 5 is barely traceable. Anal lobe black, with some whitish and yellowish scaling above it which merges into the last spot of the transverse white band. Between anal lobe and the large spot in area 2 there is black and bluish-grey scaling, the exact nature of which, however, cannot be stated, as the bulk of this area in both specimens is completely missing.

Length of forewing: 16 mm.

Comes near *S. abdominalis*, Gerhard, but the different contour of the transverse band of underside and the absence of the dark marks at anal angle of forewing beneath readily separate it from that species.